

Application No. 10/763,135
Amendment Dated July 14, 2010
Reply to Office Action of June 8, 2010

REMARKS/ARGUMENTS

By this Amendment Claims 61, 62 and 63 are amended. Claims 35, 36, 38-42, 44-52, 54 and 58-63 are pending in the application.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner rejects claims 35, 39, 44-48, 54 and 61-63 under 35 U.S.C. 103(a) as being unpatentable over Fellenstein et al. (U.S. Patent No. 7,406,691B2) (Fellenstein), in view of Barsness et al. (U.S. Patent No. 7,379,884 B2) (Barsness), and further in view of Reedy et al. (U.S. Pub. No. 2004/0030777) (Reedy).

The Examiner believes that Fellenstein in view of Barsness do not teach allocating resources in accordance with the monetary penalty amount specified by a service level agreement. However, the Examiner believes that Reedy teaches a dynamic service delivery system based on a capability to provide services through a distributed system using qualitative and quantitative Quality of Service (QoS) attributes. The Examiner directs the Applicants attention to, for example the abstract.

The Examiner also believes that Reedy teaches the request specifying resource cost value (which the Examiner believes is equivalent to the Applicants' monetary penalty amount because the extra resource, with the specified resource cost value, will be used/charged when the threshold performance requirement is not met) in the SLA (the measurable criteria includes an SLA defined for QoS definition, according to the Examiner). The Examiner further believes that, as illustrated, the exemplary SLA indicates that the resource cost value should not exceed 0.7 (e.g. 70%), the CPU usage rate should not exceed 0.8 (e.g. 80%), and the memory usage rate should not exceed 0.6 (e.g. 60%). The Examiner directs the Applicants' attention to, for example, Paragraph [0077].

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Furthermore, the Examiner believes that it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Fellenstein in view of Barsness with Reedy to include resource cost value in the SLA in order to efficiently allocate a resource based on predetermined resource cost value in the SLA.

In the Applicants' invention a number of nodes in a cluster execute applications pursuant to a service level agreement (SLA). When the terms of the SLA cannot be met, more servers are requested from a remote location. The decision whether to allocate more server nodes to meet the demand is negotiated on the basis of dollar amounts as specified by the SLAs, rather than basing the decision only on the conventional calculations of the actual computing resources. In making these decisions the Applicants' invention considers factors such as the dollar cost of not meeting a requirement of the SLA, including the SLA specified dollar penalties for not meeting the requirements of the SLA, the dollar costs of accepting the resources granted, etc.

More specifically, the decision whether to allocate additional servers depends on the dollar value of the penalties as set by the SLA for not meeting the requirements of the SLA. Thus, the Applicant's system may intentionally fail to meet a requirement of an SLA if it determines that it is more cost effective to do so, in spite of the monetary penalties imposed by the SLA for doing so. Therefore, the Applicants' Claims 61, 62 and 63 recite a limitation directed to allocating at least one server in accordance with a monetary penalty amount for a failure to meet a requirement of the service level agreement.

The Applicants' Claim 61 therefore sets forth a method for determining whether to support an application workload at a local cluster of nodes using a resource at a remote location remote from the local cluster. The claimed method includes receiving at the remote location from the local cluster a request for at least one server node determined at the local cluster in accordance with a threshold of performance requirements of the local cluster. The request specifies a number of nodes requested, a time duration for which the requested nodes are needed, and a monetary value determined in accordance with a monetary penalty amount specified by a service level agreement for a failure to meet a requirement of the service level agreement. An

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acceptance of the request is transmitted from the remote location to the local cluster in accordance with the monetary value. The at least one server node is allocated in accordance with the monetary penalty amount for the failure to meet the requirement of the service level agreement.

Reedy teaches determining a "universal measurable cost value" to assess resources based on resource capability. This is performed for plural resources to allow the system to compare the costs of different resources in order to manage and enforce service level agreements (SLA). The "measurable costs" calculated and compared in Reedy are overall costs associated with the resources. But there is no suggestion that the costs could include a monetary penalty amount incurred for violating the SLA.

More specifically, the "resource cost value" cited by the Examiner as being equivalent to the Applicant's monetary penalty amount, is not a monetary penalty incurred for a failure to meet a requirement of the service level agreement, as recited in the Applicant's claims. Paragraph [0068] of Reedy states in part:

In one aspect of the invention, a compute resource will monitor and maintain its defined service level agreement in accordance with a QoS framework consistent with certain features related to the present invention. ... For instance, a user may request that a compute resource operates with a processing module including at least six CPUs or within a particular type of processing architecture. Further, the SLA may stipulate that a CPU usage rate and a memory usage rate for the compute resource is not to exceed a predetermined threshold value, such as 80% and 40%, respectively. In one aspect of the invention, the SLA may also define a universal measurable resource cost value that a provision manager may use to assess the resource capabilities of the corresponding compute resource. The provision manager may receive resource cost values associated with a plurality of compute resources to determine an overall resource capability of a heterogeneous distributed system.

Accordingly, the resource cost value can represent an assessment of compute resources or overall resource capability in view of an SLA. But the compute resources as defined in

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Paragraph [0068] include resources such as the numbers of CPUs, the processing architecture, the CPU usage rate, the memory usage rate, etc. Paragraph [0068] is silent with respect to determining the resource cost value base on a monetary penalty amount provided by the SLA. Thus, the “compute resources” and the “homogeneous resource cost value” of Reedy are not described as including dollar values.

Furthermore, the Applicants submit that the SLA in Reedy stipulates compute resources, not monetary penalty amounts. There is no teaching or suggestion that the SLA stipulate monetary penalty amounts that can be used in determining resource allocation. SLAs are defined in Paragraph [0067] of Reedy as “a construct developed by a user (e.g., administrator) that defines a level of service for a corresponding compute resource.” There is no teaching of specifying penalty amounts. Furthermore, the Applicants submit that the entire disclosure of Reddy is completely silent with respect to dollar amounts, penalties, or penalty amounts.

The definition of Reedy’s resource cost value is further refined in Paragraph [0072] which states in relevant part:

Based on the collected resource capability objects, service provisioner 1320 may create a collection of resource capabilities based on platform capabilities and a homogeneous resource cost value for each compute resource. The resource cost value may be included in the resource capability object and represents an overall resource capability associated with a corresponding compute resource.

This portion of Paragraph [0072] merely states that the resource cost value is the compute resources, as described above. It does not teach or suggest that the resource cost value should be based on any monetary amount. Paragraph [0072] of Reedy further states:

For example, resource cost values may be provided as a quantifiable data value ranging from a minimum and maximum data value, such as 0 to 100% (e.g., 0 to 1.0).

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The Applicant's believe that Paragraph [0072] thus teaches away from the interpretation that the resource cost value could be a monetary amount or a dollar amount of any type, since dollar amounts are not expressed values between 0 and 100%. Paragraph [0072] further states:

Accordingly, service provisioner 1320 may determine that a compute resource having a resource cost value of 0.7 may have a higher "goodness" value than a compute resource with a resource cost value of 0.4. This "goodness" value is a representation of a capability of a compute resource to provision a service in system 1300 and may be independent of the type of platform the compute resource is operating. Service provisioner 1320 may use one or more of these "goodness values" to identify those compute resources 1305 best suited to provision a service based on, for example, minimum platform capabilities for a desired service and the resource cost values. Accordingly, service provisioner 1320 determines the compute resources 1305 included in system 1300 that should be made available to one or more requesting entities.

Thus, the resource cost value is not a monetary penalty amount. It is a "goodness" value which can be used to allocate resources, wherein the "goodness" value depends on enumerated items. The enumerated items are all related to compute resources (numbers of CPUs, processing architecture, CPU usage rate, memory usage rate, etc.). Monetary penalty amounts are never described as factors in determining Reedy's "goodness" value.

Thus, the Applicants submit that Reedy does not teach allocating a sever node in accordance with a monetary penalty amount for failure to meet a requirement of a service level agreement, as required by Claims 61, 62, 63. Accordingly, Claims 61, 62, 63 are believed to be allowable. The remaining claims depend either directly or indirectly from Claim 63 and are believed to be allowable for at least the same reasons.


For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

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Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Please charge or credit our Account
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entry and/or ensure consideration of
this submission.

Respectfully submitted,
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